

What is claimed is:

1. A method for forming a back-side contact for a vertical trench device comprises the steps of:

grinding a back-side of a semiconductor substrate;

5 milling a trench in the back-side of the semiconductor substrate, wherein a vertical trench fill is exposed; and depositing a conductive material, wherein the conductive material shorts the vertical trench fill to a buried plate.

10 2. The method of claim 1, wherein the conductive material is a back-side electrode.

15 3. The method of claim 1, wherein the step of grinding the back-side of the semiconductor substrate further comprises the step of grinding a dimple beneath a portion of the vertical trench device, wherein the trench is milled in the bottom portion of the dimple.

20 4. The method of claim 1, wherein the depth of the silicon removed by the step of grinding is within the buried plate.

5. The method of claim 1, wherein the conductive material is selected for a low contact resistance with Silica.

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6. The method of claim 1, wherein the conductive material is selected from the group consisting of platinum and tungsten.

5 7. The method of claim 1, wherein the step of depositing a conductive material further comprises the step of depositing the conductive material in-situ by a focused ion beam method.

10 8. The method of claim 1, wherein the step of depositing a conductive material further comprises the step of sputtering the conductive material over the bottom of the semiconductor substrate.

15 9. A method for connecting a floating source of a trench device to a back-side contact for the trench device, comprises the steps of:

20 grinding a back-side of a semiconductor substrate;  
milling a trench in the back-side of the semiconductor substrate, wherein a vertical trench fill is exposed; and  
depositing a back-side electrode in-situ by focused ion beam, wherein the conductive material shorts the vertical trench fill to a buried plate.

10. The method of claim 9, wherein the step of grinding the back-side of the semiconductor substrate further comprises the

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step of grinding a dimple beneath a portion of the trench device, wherein the trench is milled in the bottom portion of the dimple.

5 11 12. The method of claim 9, wherein the depth of the silicon removed by the step of grinding is within the buried plate.

12 13. The method of claim 9, wherein the conductive material is selected for a low contact resistance with Silica.

10 13 14. The method of claim 9, wherein the conductive material is selected from the group consisting of platinum and tungsten.

15 14 15. A memory device having an accessible source such that device parameters can be determined, comprising:

a dimple ground into a back-side of a semiconductor substrate of the device;

a trench milled from the bottom portion of the dimple exposing a portion of a vertical trench fill; and

20 a conductive material connecting the vertical trench fill and a source of the device.

16. The system of claim 15, wherein the trench is milled into a portion of the vertical trench fill.

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16 14. The system of claim 15, wherein the conductive material is a back-side electrode.

5 17. The system of claim 15, wherein the conductive material is a layer covering a portion of the back-side of the semiconductor substrate.

10 18. The system of claim 15, wherein a macro design of the memory device is substantially similar to a product line macro design.

15 19. The system of claim 19, wherein the memory device dimensions are substantially the same as those of the product line macro design.